FF-18-17

The study of a new dry extract of the motherwort herb

Yevhen Romanenko*, Oleh Koshovyi, Tetiana Ilina, Natalia Borodina, Igor Kireyev, Nadiya Tryshchuk

National University of Pharmacy, Ukraine, gnosy@nuph.edu.ua

 $* Corresponding \ author: \ eromen.m@gmail.com$

Background. The motherwort herb is one of the most used medicinal plants with the sedative action. Herbal remedies or dry raw material are part of many drugs. One of the most common drugs based on this medicinal plant is a tincture of motherwort. The disadvantage of this drug is the variability of the chemical composition, and as a result, pharmadynamics. In addition, in the manufacture of the tincture ethyl alcohol is used as an extractant. However, it not only limits the number of patients who can use this drug (children, pregnant, nursing mothers, persons whose activities require increased attention and the like), but also, in turn, it can affect the CNS and modulate the action of the drug itself [1]. The aim of our work was to study the qualitative and quantitative content of the main groups of biologically active substances (BAS) and the psychotropic activity of a new dry extract from the motherwort herb.

Materials and methods. The motherwort herb was crushed to the particle size of 1-2 mm, extracted with 70% ethyl alcohol in the ratio of 1:5 (taking into account the absorption coefficient of the extractant). It was infused, filtered and purified. The purified liquid alcohol extract was further evaporated to dryness with addition of Larginine in a triple equimolar amount relative to the content of phenolic compounds. The resulting dry extract is a greenish-yellow powder with a characteristic odor. The qualitative composition and the quantitative content of BAS in the extract from the motherwort herb were determined by Pharmacopoeial methods (thinlayer chromatography). The content of the amount of phenolic compounds calculated with reference to gallic acid, the content of derivatives of hydroxycinnamic acids calculated with reference to chlorogenic acid, and the content of the amount of flavonoids calculated with reference to rutin were determined by spectrophotometric methods [2, 3, 4]. The pharmacological activity of the extract was studied in an open field test. The study was performed on 30 white nonlinear mice weighing 18-20 g, randomly selected for the experiment. Animals were kept in standard conditions of the vivarium of the Central Research laboratory of the NPhU, on a standard water-food diet with a natural light "day-night" regime. The officinal motherwort tincture was used as a reference drug, and it was administered intragastrically in the dose of 5 g/kg. A dry extract of motherwort with addition of L-arginine pre-dissolved in purified water was administered in the dose of 160 mg/kg, it was equivalent to the dose of officinal motherwort tincture [5].

Results. The result of the phytochemical analysis of the extract obtained indicates the presence of such main active substances as iridoids, tannins, hydroxycinnamic acids and flavonoids. The content of the amount of phenolic compounds is 12.1 + 0.04%, hydroxycinnamic acids - 5.17+0.06% and flavonoids - 2.32+0.05%. According to the results of the study it has been found that the reference drug significantly reduces the amount of all types of activity by 22.3% (p<0.05), mainly due to a decrease in motor activity (the number of intersecting squares) by 33.7% (p<0.05). At the same time, it also shows a tendency to a decrease in the indicative research activity by 25.2% (p>0.05). Such activity of the extract studied indicates its sedative effect. The resulting dry extract significantly reduces the locomotor activity by 33.7%, the autonomic support of the emotional response by 38% (p<0.05) and tends to reduce the indicative research activity by 25.1% (p>0.05).

Conclusions. A dry extract of the motherwort herb with addition of L-arginine has the sedative and a marked stress-protective action. The presence of the stress-protective activity distinguishes favorably this therapeutic product from the motherwort tincture.

References:

- 1. Данилов С. А. Пустырник: фитохимические особенности и новые грани фармакологических свойств / С. А. Данилов, С. Ю. Штрыголь, С. И. Степанова // Провизор. 2011. №9. С. 27 30.
- 6The study of the phenolic composition of the dry extract of motherwort herb and its psychotropic activity / Oleh Koshovyi, Yevhen Romanenko, Andrey Komissarenko // American Journal of Science and Technologies, "Princeton University Press", 2016, № 1(21). - P. 1055 - 1059.
- Державна Фармакопея України : в 3 т. / ДП «Український науковий фармакопейний центр якості лікарських засобів». 2-е вид. – Харків: Державне підприємство «Український науковий фармакопейний центр якості лікарських засобів». – 2015. – Т. 1. – 1128 с.
- Кошовий О. М. Дослідження фенольних сполук спиртового екстракту листя евкаліпта прутовидного / О. М. Кошовий // Фармаком. – 2010. – № 3. – С. 27–31.
- 5. Methods of behavior analysis in neuroscience London, NewYork, Washington: CRC Press, 2001. 329 c.